

BULLETIN

OF THE
BROOKLYN ENTOMOLOGICAL SOCIETY

VOL. XVIII

OCTOBER, 1923

No. 4

TABANIDAE OF STATEN ISLAND AND LONG ISLAND, N. Y.

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In 1918 the junior author published a list of 33 species of Tabanidae from Staten Island, and later Mr. Edward J. Burns recorded 5 additional species from the same locality. It has been thought advisable to combine these records with other data available in local collections concerning the occurrence of these flies on both Staten Island and Long Island.

Only the genera *Chrysops*, *Merycomyia*, and *Tabanus* are thus far known from the area under consideration, the total number of species being 46; of these 40 have been found on Staten Island and 35 on Long Island. The neighboring state of New Jersey possesses 82 known species divided as follows: 1 *Haematopota*, 42 *Tabanus*, 1 *Merycomyia*, 1 *Goniops*, 2 *Pangonius*, 34 *Chrysops*, and 1 *Diachlorus*.

The following revised list of New Jersey tabanids will serve for comparison with the species listed from Staten Island and Long Island. It is compiled from Prof. J. B. Smith's New Jersey list of 1910, and later records in various entomological journals. *Chrysops hilaris* is here for the first time recorded from that state. The star indicates species we ourselves have not seen from New Jersey.

* *Haematopota punctulata* Macquart

* *Tabanus abdominalis* Fabricius

Tabanus americanus Forster

Tabanus astutus Osten Sacken

Tabanus atratus Fabricius

Tabanus bicolor Wiedemann

Tabanus carolinensis Macquart

- Tabanus cinctus* Fabricius
Tabanus coffeatus Macquart
* *Tabanus conterminus* Walker
Tabanus costalis Wiedemann
Tabanus daeckei Hine
Tabanus epistates Osten Sacken
* *Tabanus exul* Osten Sacken
* *Tabanus flavus* Macquart (= *T. mexicanus* of authors)
Tabanus fulvulus Wiedemann
Tabanus giganteus De Geer
Tabanus gracilis Wiedemann
Tabanus hinei Johnson
Tabanus lasiophthalmus Macquart
Tabanus lineola Fabricius
* *Tabanus longus* Osten Sacken
Tabanus melanocerus Wiedemann
Tabanus microcephalus Osten Sacken
* *Tabanus molestus* Say
Tabanus nigrescens Palisot de Beauvois
Tabanus nigrovittatus Macquart
Tabanus nivosus Osten Sacken
Tabanus ohioensis Hine (hardly distinct from *T. bicolor* Wiedemann)
Tabanus orion Osten Sacken
Tabanus pumilus Macquart
Tabanus recedens Walker
* *Tabanus reinwardtii* Wiedemann
Tabanus sagax Osten Sacken
Tabanus sparus Whitney
* *Tabanus stygius* Say
Tabanus sulcifrons Macquart (hardly distinct from *abdominalis* Fabricius)
Tabanus superjumentarius Whitney
Tabanus trimaculatus Palisot de Beauvois
Tabanus trispilus Wiedemann
* *Tabanus typhus* Whitney
Tabanus vivax Osten Sacken
* *Tabanus zonalis* Kirby
Merycomyia whitneyi (Johnson)
* *Goniops chrysocoma* (Osten Sacken)
* *Pangonius piger* Osten Sacken
* *Pangonius rarus* Loew
* *Chrysops amazon* Daecke
Chrysops bistellata Daecke
Chrysops brimleyi Hine

- Chrysops brunnea* Hine
Chrysops callida Osten Sacken
Chrysops carbonaria Walker
Chrysops celer Osten Sacken
Chrysops cuclux Whitney
Chrysops cursim Whitney
Chrysops delicatulus Osten Sacken
Chrysops dimmocki Hine
Chrysops excitans Walker
Chrysops fallax Osten Sacken
Chrysops flavida Osten Sacken
* *Chrysops frigida* Osten Sacken
Chrysops fulvistigma Hine
Chrysops hilaris Osten Sacken. Runyon (Wm. T. Davis Coll.)
Chrysops hinei Daecke
Chrysops inda Osten Sacken
Chrysops lugens Wiedemann and var. *morosa* Osten Sacken
* *Chrysops mitis* Osten Sacken
Chrysops moecha Osten Sacken
* *Chrysops montana* Osten Sacken
Chrysops nigra Macquart
Chrysops nigribimbo Whitney
Chrysops obsoleta Wiedemann
Chrysops parvula Daecke
Chrysops plangens Wiedemann
Chrysops pudica Osten Sacken
Chrysops sackeni Hine
Chrysops sequax Williston
Chrysops striata Osten Sacken
Chrysops univittata Macquart
Chrysops vittata Wiedemann
* *Diachlorus ferrugata* (Fabricius)

In the vicinity of Washington, D. C., McAtee and Walton (1918) list 55 species of this family (31 *Tabanus*, 1 *Merycomyia*, 1 *Goniops*, 2 *Pangonius*, 19 *Chrysops*, 1 *Neochrysops*). While farther south, in North Carolina, C. S. Brimley and F. Sherman (1904, 1908, and 1922) have recorded 70 species (41 *Tabanus*, 1 *Diachlorus*, 28 *Chrysops*).

Undoubtedly some of the New Jersey species not mentioned in the present account will eventually be captured on Staten Island or on Long Island; but there are others which are not likely to occur there. *Tabanus astutus*, *T. zonalis*, *Pangonius piger*, *P. rarus*, *Chrysops frigida*, and *C. mitis* are more northern in their

range and are only found in the mountainous portions of New Jersey. On the other hand, *Tabanus flavus*, *T. americanus*, *T. gracilis*, *T. longus*, *T. fulvulus*, *Goniops chrysocoma*, *Chrysops bistellata*, and *Diachlorus ferrugatus* are southern species which can hardly reach the vicinity of New York City.

The Tabanidae have always been a favorite family among students of Diptera. They are so aggressive, for the most part, that the entomologist acts as his own bait for many species of *Tabanus* and *Chrysops*. A tame cow is, however, the best of subjects about which to collect. These flies are also attracted by any dark-colored object like an open umbrella lying on the ground and a number of specimens have been thus taken. July 11, 1911, was a very warm day and a horse that was pulling a load of shingles through the hot pine woods at Chatsworth, New Jersey, died by the wayside. Many hours later horseflies of several species were still paying attention to the remains and sucking what they could of the animal's blood.

Some of the flies mentioned in this paper were first identified by the late V. A. E. Daecke. Later Mr. Charles W. Johnson examined others, and in December, 1916, Professor James S. Hine examined all the specimens that had been collected up to that time, and he has also recently identified some difficult specimens.

TABANINAE.

1. *Tabanus atratus* Fabricius.

STATEN ISLAND: common (Ds. Coll.); Richmond; Ft. Wadsworth; Watchogue (E. J. Burns Coll.). LONG ISLAND: Brooklyn (G. P. Engelhardt Coll.); Flatbush; Rosedale (F. M. Schott Coll.); Wading River; Long Pond, Wading River (Ds. Coll.); Massepequa; Long Beach (J. B. Coll.).

On June 24, 1906, a female was found depositing her eggs upon a plant stem on the salt meadows near the Fresh Kill bridge, Staten Island. The eggs are pure white when deposited. The pupae have also been found by us, protruding from the ground in wet places, and the imagoes have been reared.

2. *Tabanus bicolor* Wiedemann.

STATEN ISLAND: Watchogue, June 29, 1919 (E. J. Burns Coll.). LONG ISLAND: Wading River; Montauk, August 24, 1917 (Ds. Coll.).

T. ohioensis Hine is hardly separable from this.

3. *Tabanus cinctus* Fabricius.

STATEN ISLAND: one male, June 25 (Ds. Coll.). LONG ISLAND: Yaphank (G. P. Engelhardt Coll.); Kings Park (E. L. Bell Coll.); Babylon (Brooklyn Museum).

4. *Tabanus coffeatus* Macquart.

STATEN ISLAND: Clove Valley (Ds. Coll.); Watchogue (E. J. Burns Coll.). LONG ISLAND: Wading River (G. P. Engelhardt Coll.).

5. *Tabanus costalis* Wiedemann.

STATEN ISLAND: (Ds. Coll.); Richmond; Watchogue; Fort Wadsworth (E. J. Burns Coll.). LONG ISLAND: Jamaica (C. E. Olsen Coll.).

6. *Tabanus daeckei* Hine.

STATEN ISLAND: carried as prey to its nest by a female *Bembix spinolae* Lepeletier, July 2, 1916 (J. B. Coll.). Named by Prof. J. S. Hine.

7. *Tabanus epistates* Osten Sacken.

STATEN ISLAND: Huguenot (Ds. Coll.). LONG ISLAND: vicinity of Brooklyn (G. P. Engelhardt Coll.).

8. *Tabanus giganteus* De Geer.

STATEN ISLAND: Annadale, etc. (Ds. Coll.); Huguenot (E. J. Burns Coll.). LONG ISLAND: vicinity of Brooklyn (G. P. Engelhardt and C. Schaeffer Coll.).

9. *Tabanus hinei* Johnson (= *Theriopectes politus* Johnson).

STATEN ISLAND: (Ds. Coll.); Richmond; Watchogue (E. J. Burns Coll.). LONG ISLAND: Long Pond, Wading River (Ds. Coll.).

10. *Tabanus lasiophthalmus* Macquart.

STATEN ISLAND: common; Tottenville; Richmond; etc. (Ds. Coll.); Watchogue (E. J. Burns Coll.). LONG ISLAND: Montauk; Wyandanch (F. M. Schott Coll.); Wading River; Gardiner's Island (Ds. Coll.); Jamaica (A. Nicolay Coll.).

A male of this species was bred, May 29, 1900, from a pupa found underneath the bark of a tree at Fort Lee, N. J.

11. *Tabanus lineola* Fabricius.

STATEN ISLAND: common (Ds. Coll.; E. J. Burns Coll.). LONG ISLAND: Prospect Park, Brooklyn; Flatbush (G. P. Engelhardt Coll.); Jamaica; Yaphank; Aqueduct (Ds. Coll.); Orient; Long Beach (J. B. Coll.); Sands Point (E. J. Burns Coll.); Wading River (F. M. Schott Coll.).

12. *Tabanus nigrescens* Palisot de Beauvois.

STATEN ISLAND: a female from Watchogue, August 4; another female found dead on Richmond Turnpike near Silver Lake, August 10 (Ds. Coll.); a male from Watchogue, July 21, 1920 (E. J. Burns Coll.).

13. *Tabanus nigrovittatus* Macquart.

STATEN ISLAND: common on the beaches (Ds. Coll.); Watchogue (E. J. Burns Coll.). LONG ISLAND: Rosedale (F. M. Schott Coll.); Orient; Maspeth (Ds. Coll.); Rockaway Beach (C. E. Olsen Coll.); Long Beach; Gardiner's Island (J. B. Coll.); Sands Point (E. J. Burns Coll.).

This is the well-known "green-head," which is very troublesome on bathing beaches during the summer.

Daecke (Ent. News, XIX, 1908, p. 496) records having captured *Bembix spinolae* with *Tab. nigrovittatus* in its grasp.

14. *Tabanus orion* Osten Sacken.

STATEN ISLAND: Clove Valley, one female and two males; on railroad train, Richmond, August 13, 1920 (Ds. Coll.); Oakwood, July 24, 1920 (E. J. Burns Coll.). LONG ISLAND: vicinity of Brooklyn (G. P. Engelhardt Coll.).

15. *Tabanus pumilus* Macquart.

STATEN ISLAND: common (Ds., J. B., and E. J. Burns Coll.). LONG ISLAND: Rosedale (F. M. Schott Coll.); Pennyquid Barrens (J. B. Coll.).

16. *Tabanus recedens* Walker.

STATEN ISLAND: (Ds. Coll.); Watchogue (E. J. Burns Coll.).

17. *Tabanus reinwardtii* Wiedemann.

STATEN ISLAND: one male, July 24 (Ds. Coll.).

18. *Tabanus sparus* Whitney.

STATEN ISLAND: (Ds. Coll.). LONG ISLAND: Queens (F. M. Schott Coll.); Riverhead (Ds. Coll.).

19. *Tabanus stygius* Say.

LONG ISLAND: Yaphank, August 16, 1921 (G. P. Engelhardt Coll.).

20. *Tabanus sulcifrons* Macquart.

STATEN ISLAND: Watchogue; Arlington (E. J. Burns Coll.); Richmond (Miss Miriam Campbell Coll.).

21. *Tabanus superjumentarius* Whitney.

STATEN ISLAND: Richmond, July 13, 1919 (E. J. Burns Coll.).

22. *Tabanus trimaculatus* Palisot de Beauvois.

STATEN ISLAND: female and male, June 27, 1919 (Ds. Coll.); Richmond, July 17, 1920 (E. J. Burns Coll.). LONG ISLAND: vicinity of Brooklyn (C. Schaeffer Coll.).

23. *Tabanus trispilus* Wiedemann.

STATEN ISLAND: (Ds. Coll.). LONG ISLAND: Queens (F. M. Schott Coll.).

24. *Merycomyia whitneyi* (Johnson).

STATEN ISLAND: Clove Valley (C. L. Pollard Coll.).

PANGONIINAE

25. *Chrysops brimleyi* Hine.

STATEN ISLAND: Woodrow, June 22, 1907 (Ds. Coll.); Watchogue (E. J. Burns Coll.).

26. *Chrysops callida* Osten Sacken.

STATEN ISLAND: Grymes Hill; Prince's Bay; Clove Valley; Richmond; Watchogue (Ds. Coll.); Tottenville; Fort Wadsworth (E. J. Burns Coll.). LONG ISLAND: North Beach woods; Glendale (F. M. Schott Coll.); Riverhead; Yaphank; Long Pond, Wading River (Ds. Coll.); Orient; Gardiner's Island (J. B. Coll.); Rockaway Beach (C. Schaeffer Coll.).

27. *Chrysops carbonaria* Walker (= *C. fugax* Osten Sacken).

STATEN ISLAND: Richmond (Ds. Coll.). LONG ISLAND: Yaphank (Ds. Coll.); Farmingdale (J. B. Coll.).

28. *Chrysops celer* Osten Sacken.

STATEN ISLAND: common (Ds. Coll.); Richmond (J. E. Burns Coll.). LONG ISLAND: Yaphank; Deep Pond, Wading River; Central Park (Ds. Coll.); Cold Spring Harbor (J. B. Coll.).

29. *Chrysops cursim* Whitney.

LONG ISLAND: Riverhead (Ds. Coll.).

30. *Chrysops delicatula* Osten Sacken.

LONG ISLAND: Wyandanch; Riverhead; Wading River (Ds. Coll.). At Long Pond, Wading River, a female was taken as the prey of *Asilus flavofemoratus* Hine.

31. *Chrysops dimmocki* Hine.

STATEN ISLAND: Tottenville; Great Kills; Reed's Valley; Richmond (Ds. Coll.); Fort Wadsworth; Watchogue (E. J. Burns Coll.). LONG ISLAND: Orient; Riverhead; Yaphank; Wading River; Wyandanch (Ds. Coll.).

32. *Chrysops fallax* Osten Sacken.

STATEN ISLAND: Clove Valley (Ds. Coll.); Richmond (E. J. Burns Coll.). LONG ISLAND: Cold Spring Harbor (American Museum of Natural History); Wyandanch (C. Schaeffer Coll.).

33. *Chrysops flavida* Wiedemann.

STATEN ISLAND: common; Kreischerville; Lake's Island; etc. (Ds. Coll.); Watchogue; Tottenville; Fort Wadsworth (E. J. Burns Coll.). LONG ISLAND: Flatbush; Rosedale (F. M. Schott Coll.); Half Way Hollow Hills; Hills between Flanders and East Quogue; Riverhead; Yaphank; Wading River; Wyandanch (Ds. Coll.); Orient; Gardiner's Island (J. B. Coll.); Jamaica (C. Schaeffer Coll.).

34. *Chrysops inda* Osten Sacken.

STATEN ISLAND: (Ds. Coll.); Watchogue (E. J. Burns Coll.).

35. *Chrysops lugens* Wiedemann and var. *morosa* Osten Sacken.

LONG ISLAND: Wading River (Ds. Coll.); Cold Spring Harbor (J. B. Coll.).

36. *Chrysops moecha* Osten Sacken.

STATEN ISLAND: Richmond, July 12, 1919; Watchogue (E. J. Burns Coll.).

37. *Chrysops montana* Osten Sacken.

STATEN ISLAND: Clove Valley (Ds. Coll.); Fort Wadsworth (E. J. Burns Coll.). LONG ISLAND: Riverhead; Long Pond, Wading River (Ds. Coll.); Orient (J. B. Coll.); Newtown (C. Schaeffer Coll.).

38. *Chrysops niger* Macquart.

STATEN ISLAND: common; Clove Valley; Richmond; Tottenville; etc. (Ds. Coll.); Watchogue; New Dorp (E. J. Burns Coll.). LONG ISLAND: Yaphank (Ds. Coll.); Maspeth (C. E. Olsen Coll.).

39. *Chrysops nigribimbo* Whitney.

LONG ISLAND: Yaphank; Riverhead (Ds. Coll.); Queens (F. M. Schott Coll.); Wading River (J. E. Burns Coll.).

40. *Chrysops obsoleta* Wiedemann.

STATEN ISLAND: Watchogue; Clove Valley (Ds. Coll.); Kreischerville; New Dorp; Richmond (E. J. Burns Coll.). LONG ISLAND: Wyandanch (F. M. Schott Coll.); Cold Spring Harbor (American Museum of Natural History).

41. *Chrysops plangens* Wiedemann.

STATEN ISLAND: common; Watchogue; Richmond; etc. (Ds. Coll.). LONG ISLAND: Rosedale (F. M. Schott Coll.); Wading River; Nissequogue (Ds. Coll.); Sands Point (E. J. Burns Coll.); Long Beach (J. B. Coll.).

At Long Beach females of this species were visiting the flowers of *Chrysanthemum leucanthemum* and also biting man.

42. *Chrysops pudica* Osten Sacken.

STATEN ISLAND: (Ds. Coll.).

43. *Chrysops sackeni* Hine.

LONG ISLAND: a male, named by Prof. Hine (American Museum of Natural History).

44. *Chrysops striata* Osten Sacken.

STATEN ISLAND: Clove Valley; Watchogue (Ds. Coll.). LONG ISLAND: Long Pond, Wading River; Riverhead (Ds. Coll.).

45. *Chrysops univittata* Macquart.

STATEN ISLAND: common; Watchogue; Richmond; Clove Val-

ley; etc. (Ds. Coll.); Fort Wadsworth (E. J. Burns Coll.). LONG ISLAND: Half Way Hollow Hills; Wading River; south of Smithtown; Riverhead; Yaphank; Wyandanch (Ds. Coll.).

46. *Chrysops vittata* Wiedemann.

STATEN ISLAND: Tottenville (J. B. Coll.); Buck's Hollow; Richmond; Watchogue; Eltingville; Great Kills (Ds. Coll.); Arlington; Huguenot; Fort Wadsworth (E. J. Burns Coll.). LONG ISLAND: Oakdale; Wyandanch (F. M. Schott Coll.); Yaphank; Riverhead (Ds. Coll.); Cold Spring Harbor; Gardiner's Island (J. B. Coll.).

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Wanted.—Short notes on food plants, localities, etc., from 3 to 20 lines long.

—*Editor.*